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***Guidelines For Publication Of Scientific And Technical Papers By Southern Region
Employees***

NOTICE: This publication is available at: <http://www.nws.noaa.gov/directives/>.

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Signed by

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Date

Director, Southern Region

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1. Introduction. The purpose of this supplement is to establish policy and procedures to be followed in the NWS Southern Region concerning the writing, reviewing, and subsequent publication of Technical Attachments, Technical Memoranda, conference papers, and formal publications.

2. Policies and Procedures. This supplement establishes the following policy: any manuscript, electronic or printed, which is produced for publication and authored or co-authored by a NWS SR employee, will be submitted to the SR Scientific Services Division (SSD) for review to ensure scientific integrity and adherence to NWS policies and procedures. Participation in conferences by SR personnel for the purpose of reporting on research which was conducted on official duty or produced using government resources must also receive prior approval from SR SSD.

3. Overview

3.1 General Comments on Various Publication Media. Employees are encouraged to carry out local studies and investigations *and communicate the results of those efforts to others*. There are several ways the results can be documented. The method used depends on the scope of the investigation and the intended audience. The Scientific Services Division (SSD) will assist as necessary in preparing such papers.

The easiest way to document a study is to write it informally and include it in the local office reference files or on the office Intranet. The documentation might include maps, analyses, interpretive discussions, satellite imagery, and so on. Form and content can vary.

More structured documentation is required for studies that will receive wider distribution or use. The reasons are simple: Readers expect to get quickly to the point of the study without wading through unnecessary discussion or pages of material. In addition, the costs of reproduction and distribution usually have to be kept to a minimum.

Four avenues of documentation and distribution are described in detail below. The first three (Technical Attachments, Technical Memoranda, and conference papers) are not formal publications *per se* because the review process is not rigorous. Since these papers have not been subject to critical peer review, most scientific or technical journals do not allow references to papers included in those media. These less formal publications serve an important purpose by informing a wide audience of a scientific investigation. The fourth avenue, *formal publication*, requires rigorous and time-consuming peer review. It is also the most expensive.

3.2 Style Comments. In all forms of written communication, it is the responsibility of the author to convey his/her message in a concise manner. In addition, figures must be clean and legible. Color figures may be used liberally in electronic publications (Technical Attachments, Technical Memorandum, and Conference Preprints/proceedings). However, color figures in formal publications should be held to a minimum due to printing costs. Author(s) should realize any figures, images, and/or photographs are applicable to all copyright laws. Any questions concerning this should be forwarded to SSD.

Authors should adhere to the American Meteorological Society (AMS) manuscript style, which is described on the inside back cover of the AMS journals. The AMS guidelines for reference materials will be followed. The guidelines for references may be found at: <http://www.ametsoc.org/pubs/refstyl.html>. The complete AMS Author's guide can be found at http://ametsoc.org/PUBS/Authorsguide/pdf_vs/authguide.pdf.

3.3 The Role of Supervisors. Hydrologists-in-Charge (HIC) and Meteorologists-in-Charge (MIC) should encourage and support the development of local studies by members of their staff. If the studies

warrant, supervisors should also encourage individuals to work toward wider distribution. The Science and Operations Officer (SOO) or Development and Operations Hydrologist (DOH) are the technical program leaders at their offices, and part of their job will be to lead and encourage local studies, including appropriate documentation. The SOO or DOH should review and approve all manuscripts before they are submitted to SSD.

The HIC or MIC, or their designee, should submit the manuscript to SSD, after consulting with the DOH or SOO. Once a manuscript is submitted, SSD assumes the manuscript has been reviewed and approved by the submitting office.

3.4 The Role of SSD. SSD can assist in all stages of the publication process. In the preparation phase, SSD can provide ideas for studies, assist in acquiring data, help locate references and facilitate contact with others (university researchers, for example) who might provide assistance. In the review phase, SSD will critique all studies intended for Technical Attachments and Technical Memoranda, and also provide clearance for more formal publication. Aside from providing guidance and assistance, SSDs role is to ensure that all Southern Region studies present a professional and scientific appearance.

4. Technical Attachments

4.1 Purpose and Philosophy. Technical Attachments are distributed electronically as a part of Southern Region's *Southern Topics*. This publication is made available on the Internet and is available on the World Wide Web at <http://www.srh.noaa.gov/ssd/html/pubs.htm>.

A Technical Attachment is the appropriate medium for:

- Preliminary results of on-going research,
- Short case studies of hydrological or meteorological events,
- "For-your-information" subjects,
- Documentation of local techniques, or
- Subjects with limited direct operational applications.

A Technical Attachment is designed to provide a medium by which authors can *quickly* distribute information on the Internet to an interested audience, mainly operational meteorologists and hydrologists.

A Technical Attachment is afforded more freedom from intense review processes. It should be considered a very informal publication. The Technical Attachment will be reviewed for scientific accuracy and technical correctness, but the level of scrutiny will be much lower than that of more formal types of publications.

4.2 Format. Technical Attachments should be no longer than eight pages, text and figures included. The short format is a result of the stated purpose (see above) and the necessity of maintaining a reasonable overall length for a quick relay of information to operational forecasters. Technical Memoranda should be considered for more detailed and longer studies.

No specific format is required for Technical Attachments, but SSD recommends manuscripts adhere to a format and style similar to that used in journals of the AMS. The AMS style guide (http://ametsoc.org/PUBS/Authorsguide/pdf_vs/authguide.pdf) should be followed for citing and listing references, use of abbreviations and units, symbols and equations, and so on. This will provide some measure of standardization among papers and greatly reduce the time and effort involved in editing papers.

Manuscripts provided to SSD should be produced electronically, using MS Word format. This will allow SSD to exchange comments and edits with the author. Photographs, figures, and tables should be imbedded logically in the text or at the end of the document.

4.3 The Review Process. A manuscript review is for the benefit of both the author and the reader. Reviewer critiques enhance an author's scientific knowledge and technical writing skills. The result is a readable and scientifically correct product for both the author and the reader.

SSD will provide a final review of manuscripts sent through the MIC or HIC or their designee. Appropriate subject-matter experts outside SSD might also be asked to provide a review. Reviewers must keep in mind the purpose and philosophies of Technical Attachments when reviewing the manuscript. This review should take no longer than three weeks.

5. Technical Memoranda

5.1 Purpose and Philosophy. A Technical Memorandum is an informal publication of results that are not appropriate, or not yet ready, for formal publication. Technical Memoranda are electronically distributed to Southern Region offices, other regions, NWS Headquarters, many NOAA offices and research laboratories, and other selected external groups (some universities, for example). Additionally, Technical Memoranda are placed on the Internet at <http://www.srh.noaa.gov/ssd/html/pubs.htm>.

A Technical Memorandum is the appropriate medium for:

- Results of work in progress,
- Detailed case studies of hydrological or meteorological events,
- Documentation of technical procedures and practices which should have interest or application beyond the local office area.

A Technical Memorandum is designed to:

- Provide a medium by which authors can thoroughly explain results, techniques, and/or phenomena of interest, and
- Allow an author to publish results at relatively low-cost and reasonably wide distribution, without the rigorous review required for formal publication.

5.2 Format. There is no page limit on Technical Memoranda. As with any formal scientific or technical documentation, the author(s) should be concise. The manuscript should be in a format similar to refereed journals such as *Monthly Weather Review* or *Weather and Forecasting*. Lengthy manuscripts should include an abstract.

Manuscripts should be sent to SSD electronically, as described in Section 4.2

5.3 The Review Process. SSD will review manuscripts and generally seek two additional reviews from appropriate subject-matter experts at field offices. Reviewers must keep in mind the purpose and philosophies of Technical Memoranda when reviewing the manuscript. SSD will coordinate this review process and, if necessary, will return the manuscript to the author for revision. This initial review process should take no longer than six weeks. Revised manuscripts must be returned to SSD for final action.

6. Conference Papers

6.1 Purpose and Philosophy. Brief written papers (posters) are usually a prerequisite to presenting results at any professional conference. These papers are often compiled into pre- or post-print volumes. Conferences (and their papers) are a means by which results of work may be presented to the scientific community in a timely fashion without a rigorous review process.

Many conferences have adopted poster sessions in addition to verbal presentations. Although written summaries are usually still included in the pre- or post-print volumes, the author presents his/her results orally to small groups of people at the conference using one or more posters. A conference paper (and presentation or poster) is the appropriate medium for:

- Preliminary or final results of a research project that has broad-based scientific interest,
- Thorough case studies of hydrological or meteorological events, or
- Documentation of new techniques relevant to both NWS and non-NWS interests.

6.2 Format. Professional journals such as the *Bulletin of the American Meteorological Society* and *National Weather Association Digest* will frequently list a “Call for Papers” which describes the format, procedure, and deadlines interested authors must follow.

6.3 The Review Process. Most conferences request an abstract in their Call for Papers, and they use this for selecting participants. The author (through the MIC/HIC or their designee) must submit a copy of the abstract to the conference and SSD.

Submitting a copy of the abstract to SSD will indicate to SSD that the author wishes to attend the conference. SSD then coordinates with the Regional Director in arranging support for conference attendance (including travel, fees, and page charges). See SR supplement 09-05, "Participation in Professional, Technical, and Scientific Meetings," for additional information regarding attendance at scientific meetings.

6.4 Page charges. Preprint or post-print volumes include written versions of presentations made at scientific conferences. After a paper or poster is accepted for presentation the sponsoring organization for the conference will usually provide the author with a form itemizing costs associated with printing (page charges). Participants should complete the form, determining if necessary the estimated total costs, and indicate on the form that the method of payment will be by means of the government purchase card. The MIC/HIC or division chief is the authorizing official for the form, which should be returned to the sponsoring organization.

If the page charge form contains only an estimate of the charges, then the form is not an invoice. *Do not include the purchase card number on the form.* The sponsoring organization will subsequently provide an invoice once the actual publication costs are known. That invoice should then be paid using the purchase card, following normal procedures as with any invoice.

The same procedures apply to publication costs associated with papers which are formally published in refereed journals. However, in the rare case where publication charges exceed \$2500, a procurement request (form CD-435) must be used in place of the purchase card.

The Regional Director's funds will normally be used to pay publication costs. Appropriation codes to be used for page charges are:

- *Organization code* - that code which designates the participant's official duty location.
- *Task code* - to be provided each year by SRH Administrative Management Division.
- *Object class* - 2411 (use of this code will ensure costs are not assessed against the MIC's or HIC's allocated funds).

6.5 Abstract submission fee. The AMS requires payment of a fee at the time an abstract is submitted for consideration by the conference organizer. In effect, that fee is pre-payment of part of the preprint publication cost that will accrue if an abstract is accepted for the conference. If the abstract is rejected, then the fee is returned by the AMS. Payment is to be made with local office funds, using the

government purchase card. Ensure that a receipt is received for payment and process that transaction as with any other purchase made using the government purchase card.

After an abstract is accepted for a conference, the manuscript must be sent to SSD for review before final submission. This review process should take no longer than two weeks. Since deadlines for submission of completed manuscripts are quite rigid, authors must allow time for this review in their plans.

7. Formal Publications.

7.1 Purpose and Philosophy. Formal publications in professional journals such as *Monthly Weather Review* and *Weather and Forecasting* receive international distribution among the scientific community. Each journal usually has a statement of purpose listed on its inside cover. The author must determine which journal would be most appropriate for publication of his/her work.

A formal publication in a professional journal is the appropriate medium for:

- Final results of a research project that has broad-based scientific interest,
- Thorough case studies of meteorological or hydrological events, or
- Documentation of new techniques relevant to both NWS and non-NWS interests.

7.2 Format. The inside covers of most professional journals contain information on format and content. The author must follow these instructions.

7.3 The Review Process. Manuscripts for formal publication must be sent to SSD (through the MIC/HIC or SOO/DOH) for review *prior* to their final submission to a professional journal. The primary purpose of this review is to ensure that statements in the manuscript are in agreement with NWS policies and procedures. This review process should take no longer than three weeks. Since the journals have a rigorous review process of their own, SSD will not submit papers to an extensive review unless requested by the author(s). After approval by SSD, it is the author's responsibility to submit the manuscript to the journal editor for publication (again, through the HIC/MIC).

Most journals have two or three anonymous reviews by colleagues in the same field who are chosen by the editor. After the first review, the editor will accept the paper outright (rarely), accept it with revisions, or not accept it at all. If the manuscript is accepted pending revision, the author must reply to each reviewer's comments by changing the text or supporting his or her original points. During the revision process, SSD (and the DOH or SOO) will assist in any way possible. The revised manuscript and comments are then returned to the editor for further review. This entire process can take quite some time. Publication usually follows several months after the *final* submission. Page charges for publication are handled the same as for conference preprint papers, the procedure is explained in Section 6.

APPENDIX A

HOW TO WRITE A TECHNICAL PAPER

Here are ten points which we believe will help anyone document the results of a scientific study with a quality paper.

1. Before you write a scientific paper, read some. In fact, read many! Journals such as *Weather and Forecasting*, *Monthly Weather Review* and the *National Weather Digest* contain many papers that are operationally relevant. All underwent a fairly rigorous review process during which the authors revised their work, probably to incorporate most of the ideas below. Follow their examples. Scientific writing has a formal structure that differs from ordinary business or conversational writing.
2. Follow a logical order. Typically, technical papers have an *Introduction* that tells the reader what the paper is about. Most of the references to previous work should appear in the Introduction. The *Data* section, when appropriate, describes all the data you used in your work. The *Analysis* section describes the techniques you used to arrive at your results. The *Results* section is where you present your results and their implications. Most papers end with a *Summary*, or *Conclusions*. Many readers will likely read only your Introduction and Conclusions: if you fail to capture their interest in those sections, they may never read the rest of the paper!
3. Be *clear*, *concise*, and *complete*. Remember these three “C’s” and do not use more words than necessary. Do you really need to say “convective thunderstorms were initiated in the area of interest,” when all you mean is “rain began”? Review the drafts of the paper with the specific intention of eliminating all unnecessary words, phrases, and even paragraphs.
4. Strive for accuracy. Try to leave nothing to doubt. Science is based on fact; so when you describe what you did, how you did it, and what the results mean, make sure readers can follow your logic. Base conclusions on facts, not on your assumptions. Readers may not agree with your conclusions, but that should not be because they did not understand what you did. While in the draft stage, ask others to read and comment on the paper.
5. Get to the point quickly, and stick to it. Length counts for little in a scientific paper—in fact, just the opposite. State the problem clearly, move on to your analysis of the problem, summarize your results, and include references. Don’t wander off into lengthy discussions of topics that have no real bearing on the problem.
6. Include only references that are relevant, and make sure they are cited in your paper. Including extraneous references does not enhance the scientific merit of your study. Do not cite references that no one else will be able to find. Use a standard style for listing references, such as that used in the *Monthly Weather Review*, or *Weather and Forecasting*, to make sure you have included all the information needed to locate a reference.

7. Use standard abbreviations for units, and be consistent. Follow the style guide for references and units that is published inside the covers of each *Monthly Weather Review and Weather and Forecasting*, or *Journal of Hydrometeorology*.
8. Include only the figures or tables that are necessary. Each figure or table and its caption should be self-explanatory. Figures should be legible and uncluttered. Do not include extraneous information in the figures or tables. If the caption is long, it probably means the figure is too complicated. One figure or table really can be worth a thousand words, so try to let them speak for themselves and save the unnecessary words (in both the captions and the text of your paper).
9. Use a spell checker and a grammar checker. Each can help you improve your writing.
10. Proofread. You may be surprised at the number of errors you find. Although you have used the spell checker, remember there are many words with more than one spelling (there, they're, their; to, too, two; etc